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10/807,472	03/24/2004	Osamu Nakamura	740756-2722	2927

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EXAMINER	
DHINGRA, RAKESH KUMAR	
ART UNIT	**PAPER NUMBER**
1763	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/807,472	NAKAMURA, OSAMU	
	Examiner	Art Unit	
	Rakesh K. Dhingra	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☒ Claim(s) *19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 19 is objected to because of the following informalities:

In line 3 – "he voltage" may please be replaced by "the voltage".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as explained hereunder.

Claims 7-9, line 2 recites "scanning of the plurality of plasma generation units" which is not disclosed as such. Specification page 3, line 13 discloses "scanning a substrate stage". Therefore for the purpose of examination on merits, the limitation has been interpreted as "scanning of the stage by the plurality of plasma generation units".

Response to Arguments

Applicant's arguments with respect to claim 1-18 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended claims 1-3, 5-18 by adding new limitations and also added new claims 19-23.

Amended claims 1-3 have been rejected under 35 USC 103 (a) as being unpatentable over Babko-Malyi (US PGPUB. No. 2003/0106788) in view of Seki et al (US Patent No. 6,538,387) as explained below.

Further dependent claims 4-18 and new claims 19-23 have also been rejected under 35 USC 103 (a) as explained below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 10-15 are rejected under 35 U.S.C. 102(e) as being unpatentable over Babko-Malyi (US PGPUB. No. 2003/0106788) in view of Seki et al (US Patent No. 6,538,387).

Regarding Claims 1,13: Babko-Malyi teaches an atmospheric plasma apparatus (Figures 1-6) comprising:

a plasma generation unit (Figures 1a,1b,2) comprising a receiving (first) electrode 16 and a plurality of (segmented electrode) second electrodes 12 opposed to the first electrode; and

a gas supply unit (not shown) for introducing a process gas into a space 19 between the first electrode and the plurality of second electrodes (Paragraphs 0027 –0029),

wherein the plurality of plasma generation units are arranged linearly in one line or a plurality of lines (Figure 2, Paragraph 0030).

Babko-Malyi also teaches other embodiments (Figures 5a, 6b) of the invention that have plurality of plasma discharge devices (units) 505 [Paragraphs 0034-0039].

Babko-Malyi further teaches that the segmented electrode (second electrode) 12 can have different shapes/configurations as required (Paragraph 0027).

Babko-Malyi also teach first electrode 16 covered with dielectric 15 and plurality of second electrodes 12 covered with dielectric plate 11 (Paragraph 0027).

Babko-Malyi does not teach a unit for applying a voltage to a predetermined electrode among the plurality of second electrodes.

Seki et al teach a plasma apparatus (Figure1, 5) that uses a substrate 5 on which plurality of electrodes 1-4 are formed using dry etching (includes photolithography techniques). Seki et al further teach an element (voltage applying unit) 50 that enables plasma generation between any (predetermined) pair of electrodes by application of voltage through element 50. Seki et al also teach that such apparatus can be used to form and pattern thin films and elements like TFT (Thin Film Transistors) [Column 2, line 65 to Column 3, line 67).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to voltage supplying arrangement for plurality of electrode as taught by Seki et al in the apparatus of Babko-Malyi to enable formation of plasma at desired location on the substrate 5 (Column 3, lines 1-12).

Regarding Claims 2-4: Babko-Malyi teaches all limitations of claims including other embodiments (Figures 5a, 6b) of the invention that have plurality of plasma discharge devices (units) 505 [Paragraphs 0034-0039]. Babko-Malyi does not teach specific dimensions of second electrode but discloses that the segmented electrode (second electrode) 12 can have different shape/configuration as required (Paragraph 0027).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to select dimensions of second electrode as per requirement in the apparatus of Babko-Malyi to enable high electric field concentration (Paragraph 0027).

In this connection courts have ruled (Case law):

"Regarding change in size/proportion: It was held in re Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984) that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device."

Regarding Claims 5, 6: Babko-Malyi teaches that the apparatus (Figures 5a, 5b) has provision for moving plasma discharge unit 505 with respect to receiving electrode (substrate) 515 [Paragraphs 0035, 0036].

Regarding Claims 10-12: Seki et al teach that the plasma apparatus (Figure1, 5) uses a substrate 5 on which electrodes 1-4 are formed using dry etching (includes photolithography techniques). Seki et al also teach that such apparatus can be used to form and pattern thin films and elements like TFT (Thin Film Transistors) [Column 2, line 65 to Column 3, line 67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use plasma apparatus with electrodes using lithography techniques as taught by Seki et al to enable generate plasma in a plurality of arbitrarily small regions of a substrtae (Column 1, lines 30-35).

Regarding Claims 14,15: Babko-Malyi teaches that receiving electrode 16 is covered with dielectric 15. Babko-Malyi also teaches that primary dielectric plate 11 surrounds (covers) the segmented electrode 12 (Paragraphs 0027, 0028).

Claims 7-9, 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babko-Malyi (PGPUB. No. 2003/0106788) in view of Seki et al (US Patent No. 6,538,387) as applied to Claim 1 and further in view of Suzuki et al (US PGPUB. No. 2002/0064597).

Regarding Claims 7-9: Babko-Malyi in view of Seki et al teaches all limitations of the claims including application of voltage to a predetermined electrode 12 (for plasma generation).

Babko-Malyi in view of Seki et al does not expressely ,teach synchronization between scanning of the plurality of plasma generation units with the application of voltage to the predetermined electrode.

Suzuki et al teach an atmospheric pressure plasma apparatus (Figure 1) that has a high voltage power supply 22 and a control device (not shown in Figure) that controls the voltage applied between the electrodes 14, 16 depending upon process conditions like type and size of substrate materials to be processed and that the control device can pulse the supplied voltage. Suzuki et al further teach that the control device can also control the timing and duration of application of voltage pulses. Suzuki et al also teach control of relative speed (scanning) between substrates 28 and plasma generation unit 10, and that plural plasma generating devices are also within the scope of his invention. (Paragraphs 0048, 0092).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to synchronize the scanning of plurality of plasma generation unit with the application of voltage to the predetermined electrode as taught by Suzuki et al in the

apparatus of Babko-Malyi in view of Seki et al to enable precise control of irradiation time of plasma (Paragraphs 0048, 0055).

Regarding Claims 16-18: Seki et al teach voltage is applied to the pre-determined-electrode for performing the etching, film formation, and surface modification over an object to be treated (Column 2, lines 1-8).

Regarding Claims 19-21: Suzuki et al teach a conveyor (stage) 32 to which an object 28 to be treated is fixed, wherein a scanning of the stage is synchronized with the application of the voltage to the predetermined electrode as explained above.

Regarding Claims 22, 23: Seki et al teach the film formation, etching treatment, or the surface modification is performed under atmospheric pressure (Column 3, lines 25-30).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rakesh Dhingra

Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763